

In the Claims:

1. (Currently Amended) A method of manufacturing a semiconductor device, comprising:
forming a collector layer of a first conductivity type;

forming a base region of a second conductivity type ~~formed~~ on a top surface of said collector layer of said first conductivity type, said first conductivity type being opposite said second conductivity type, said base region being formed using epitaxial growth technology, and being formed as a single region having a uniform ~~depth~~ impurity concentration with respect to a width direction of the base region;

forming a groove in a top surface of said base region at a portion thereof;

forming spacers on sidewalls of said groove;

forming a diffusion source film in said bottom surface of said groove to be embedded therein between said spacers; and

forming an emitter region of said first conductivity type in said base region at a bottom surface of said groove, said emitter region being formed in said top surface of said base region at a bottom of said diffusion source film between said spacers.

Claim 2 (Cancelled).

2 ~~3~~ (Previously Presented) A method of manufacturing a semiconductor device according to claim 1, wherein said base region is formed on said top surface of said collector layer by a diffusion of impurities at a prescribed diffusion depth.

3 ~~4~~ (Previously Presented) A method of manufacturing a semiconductor device according to claim 1, wherein said base region has a flat bottom surface beneath said emitter region and beneath a base electrode.

Claim 5 (Cancelled).

4 ~~5~~ 6. (Currently Amended) A method of manufacturing a semiconductor device according to

claim 1, further comprising:

forming a base electrode on said top surface of said base region around said portion of said groove; and

forming an emitter electrode on said surface of said diffusion source film.

5 ~~7~~ (Previously Presented) A method of manufacturing a semiconductor device according to claim ~~6~~⁴, wherein said base electrode and said emitter electrode are formed of aluminum material.

6 ~~8~~ (Previously Presented) A method of manufacturing a semiconductor device according to claim 1, wherein said diffusion source film is a polycrystalline silicon layer having impurities for emitter diffusion.

7 ~~9~~ (New) A method of manufacturing a semiconductor device according to claim 1, wherein said forming of the base region of the second conductivity type using epitaxial growth technology comprises forming the base region by vapor deposition.

8 ~~10~~ (New) A method of manufacturing a semiconductor device according to claim ~~9~~⁷, wherein said vapor deposition includes adding a dopant during said vapor deposition.

9 ~~11~~ (New) A method of manufacturing a semiconductor device according to claim 1, wherein said forming of the base region of the second conductivity type comprises adding a dopant during epitaxial growth of the base region.

11 ~~12~~ (New) A method of manufacturing a semiconductor device, comprising:
forming a collector layer of a first conductivity type;
forming a base region of a second conductivity type on a top surface of said collector layer of said first conductivity type, said first conductivity type being opposite said second conductivity type, said base region being formed using epitaxial growth technology while adding dopant during epitaxial growth so as to obtain the second conductivity type;

forming a groove in a top surface of said base region at a portion thereof;
forming spacers on sidewalls of said groove;
forming a diffusion source film in said bottom surface of said groove to be embedded therein
between said spacers; and

forming an emitter region of said first conductivity type in said base region at a bottom surface
of said groove, said emitter region being formed in said top surface of said base region at a bottom
of said diffusion source film between said spacers.

¹¹
~~1.2~~ ~~13~~ (New) A method of manufacturing a semiconductor device according to claim ~~12~~,
wherein said base region has a flat bottom surface beneath said emitter region and beneath a base
electrode.

¹¹
~~1.3~~ ~~14~~ (New) A method of manufacturing a semiconductor device according to claim ~~12~~, further
comprising:

forming a base electrode on said top surface of said base region around said portion of said
groove; and

forming an emitter electrode on said surface of said diffusion source film.

¹³
~~1.4~~ ~~15~~ (New) A method of manufacturing a semiconductor device according to claim ~~14~~,
wherein said base electrode and said emitter electrode are formed of aluminum material.

¹¹
~~1.5~~ ~~16~~ (New) A method of manufacturing a semiconductor device according to claim ~~12~~,
wherein said diffusion source film is a polycrystalline silicon layer having impurities for emitter
diffusion.

¹⁰ ~~17~~ (New) A method of manufacturing a semiconductor device according to claim 1,
wherein said forming of the base region of the second conductivity type comprises forming the base
region by vapor deposition.
